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BULLETIN

OF THE

TORREY BOTANICAL CLUB

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Vol. 48 No. 12

BULLETIN

OF THE

TORREY BOTANICAL CLUB

DECEMBER, 1921

Phytogeographical notes on the Rocky Mountain region X. Grasslands and other open formations of the Montane Zone of the Southern Rockies

PER AXEL RYDBERG

In a previous article* I have discussed the wooded formations of the Montane Zone. In this article the remaining formations are taken up. In these, the plants of the plains and foothills make up a larger proportion of the vegetation than in the wooded formations. The river valleys, meadows, and hog backs have a flora much more like that of similar habitats in the foothill region and even on the plains. The transcontinental elements and those from the prairie region are much more numerous.

The formations have been arranged so that the hydrophytic are first taken up and then the mesophytic, the most xerophytic being left until the last. The species followed by a dagger, "†", are confined to the Southern Rockies.

A. AQUATIC FORMATIONS

Lakes are not very common in the Montane Zone of the Southern Rockies. In the higher parts they are mostly glacial, fed by the snow fields, and contain little vegetation. The brooks are swift and rarely form lakes or ponds in the higher regions. Most of the lakes are found in the lower river valleys and "Parks"

* Bull. Torrey Club 47: 441–454. 1920.

[The BULLETIN for November (48: 285–314) was issued January 19, 1922.]

of Colorado, and here we find most of the aquatic vegetation. The majority of the phaneorgamic plants are found also in the plains and prairie regions. To these belong a score of species of *Potamogeton* which here are omitted. Besides these the following species are found:

1. TRANSCONTINENTAL AND EASTERN

Sparganium angustifolium
Sparganium minimum
Triglochin palustris
Triglochin maritima
Alisma brevipes
Sagittaria latifolia
Phragmites Phragmites
Catabrosa aquatica
Panicularia grandis
Panicularia borealis
Panicularia septentrionalis
Eleocharis palustris
Scirpus validus
Lemna trisulca
Lemna gibba
Lemna minor
Persicaria coccinea
Batrachium trichophyllum
Batrachium flaccidum
Batrachium Drouetii
Ranunculus Purshii
Sisymbrium Nasturtium-aquaticum
Callitriche palustris
Callitriche autumnalis
Hippuris vulgaris
Sium cicutifolium
Menyanthes trifoliata
Veronica americana
Utricularia vulgaris
Utricularia minor

2. WESTERN

Crunocallis Chamissonis
Nymphaea polysepala

3. ENDEMIC

Panicularia pauciflora
Agrostis depressa†
Cardamine cordifolia†
Cardamine infausta†
Ranunculus intertextus†

B. SEDGE BOGS

The sedge bogs are found where the drainage is poor or in low places around lakes, ponds, and streams. In most cases the most numerous plants are species of *Carex*, but many grasses also are intermixed, and in some places they are predominant. Of these *Alopecurus aristulatus* and *Agrostis alba* are the most frequent and, in the lower part of the zone, species of *Calamagrostis*. The composition of the bog vegetation consists of the following plants:—

1. CONTINENTAL AND EASTERN

Deschampsia coespitosa
Phalaris arundinacea
Calamagrostis elongata
Calamagrostis canadensis
Calamagrostis hyperborea
Beckmannia erucaeformis
Panicularia nervata
Alopecurus aristulatus
Eriophorum angustifolium
Eriophorum gracile
Carex gynocrates
Carex diandra
Carex disperma
Carex canescens
Carex brunnescens
Carex leptalea
Carex aurea
Carex paupercula
Carex Buxbaumii
Carex aquatilis
Carex lanuginosa
Carex viridula
Carex rostrata
Carex retrorsa
Rumex occidentalis
Rumex mexicanus
Ranunculus sceleratus
Cardamine pennsylvanica
Parnassia parviflora
Argentina Anserina
Geum rivale
Viola palustris
Veronica Wormskjoldii
Elephantella groenlandica
Gnaphalium uliginosum
Senecio pauciflorus
Lycopodium annotinum
Equisetum arvense
Equisetum pratense
Equisetum variegatum

2. WESTERN

Poa interior
Agrostis humilis
Agrostis grandis
Agrostis asperifolia
Agrostis idahoensis
Muhlenbergia comata
Carex simulata
Carex athrostachya
Carex tenuirostris
Carex Raynoldsii
Carex Kelloggii
Juncus Mertensianus
Iris missouriensis
Limnorchis viridiflora
Limnorchis borealis
Rumex hymenosepalus
Alsine strictiflora
Alsine obtusa
Alsine calycantha
Ranunculus alismaefolius
Ranunculus Eschscholtzii
Argentina argentea
Vicia oregana
Vicia sparsiflora
Epilobium brevistylum
Epilobium occidentale
Dodecatheon pauciflorum
Castilleja exilis
Mimulus Lewisii
Galium subtriflorum
Aster occidentalis
Aster Burkei
Erigeron salsuginosus
Gnaphalium sulphurescens
Arnica longifolia

3. ENDEMIC

Alopecurus occidentalis
Graphephorum Shearii†
Panicularia pauciflora
Agrostis Rossae
Agrostis melaleuca
Agrostis Bakeri†
Carex pseudoscirpoidea
Carex ebenea†
Juncus truncatus
Juncus Hallii
Sisyrinchium alpestre†
Rumex praecox†
Rumex subalpinus†
Rumex densiflorus†
Ranunculus inamoenus
Ranunculus acriforme
Ranunculus micropetalus†
Caltha rotundifolia†
Aconitum porrectum†
Aconitum columbianum
Clementsia rhodantha
Vicia dissitifolia†
Epilobium ovatifolium†
Epilobium americanum
Epilobium stramineum
Epilobium Drummondii
Epilobium wyomingense
Angelica pinnata
Primula incana
Dodecatheon philoscia†
Dodecatheon radicatum†
Anthopogon thermalis
Swertia scopulina
Myosotis alpestris
Castilleja sulphurea
Castilleja wyomingensis
Orthocarpus purpureo-albus
Erigeron minor
Erigeron lonchophyllus
Arnica rhizomata
Arnica foliosa
Senecio cymbalarioides
Senecio nephrophyllus
Senecio crassulus
Senecio semiamplexicaulis
Senecio rapifolius
Senecio dispar
Senecio perplexans

C. SPRINGY PLACES

The springs and the wet places in their vicinity usually have a flora of their own. This consists of hydrophytes, growing either in the water itself or on the muddy shores. As a rule the plants are small in size.

1. EASTERN AND TRANSCONTINENTAL

Eleocharis acicularis
Lemna trisulca
Lemna minor
Lemna gibba
Sisymbrium Nasturtium-aquaticum
Parnassia parviflora
Tillaeastrum aquaticum
Callitriche palustris
Callitriche autumnalis
Epilobium adenocaulon
Myosotis alpestris

2. WESTERN

Muhlenbergia filiformis
Juncus Mertensianus
Crunocallis Chamissonis
Parnassia fimbriata
Micranthes arguta
Androsace filiformis
Mimulus Langsdorfii

3. ENDEMIC

Agrostis depressa†
Cardamine cordifolia
Cardamine infausta†
Radicula alpina
Micranthes rhomboidea
Micranthes arnoglossa
Oxypolis Fendleri†
Primula incana
Pleurogyne fontana
Mimulus puberulus

D. SANDY RIVER BANKS

The flora of the sandy river banks and sand-flats along the water courses is very meager. Besides some of the species which are enumerated below, under the heading "Sand-draws," there are found the following which require more moisture:—

Eleocharis acicularis
Scirpus pauciflorus
Muhlenbergia Wolfii†
Sagina saginoides
Alsinopsis macrantha†
Myosurus aristulatus
Ranunculus reptans
Halerpestes Cymbalaria
Radicula alpina
*Subularia aquatica**
*Tillaeastrum aquaticum**
Gilia calcarea†
Androsace filiformis
Androsace diffusa†
Androsace subulifera†
Mimulus moschatus
Mimulus puberulus
*Limosella aquatica**
Erigeron minor

E. ALLUVIAL RIVER BANKS

The formations on the alluvial river banks and river flats are of three kinds. Along the smaller brooks, especially in the upper portion of the zone, they resemble much those of the Subalpine Zone, the most important plants being species of *Mertensia*, *Epilobium* and *Juncoides*. In the lower part of the zone *Urtica gracilis* and various composites constitute the greater part of the vegetation. At middle altitudes species of *Delphinium* and *Aconitum* often take their places. Very few of the plants are transcontinental or eastern.

* Growing mostly in shallow water with sandy bottom.

1. TRANSCONTINENTAL

Juncoides parviflorum
Juncoides intermedium
Juncoides spicatum
Urtica gracilis
Epilobium adenocaulon
Veronica Wormskjoldii
Artemisia biennis

2. WESTERN

Amaranthus Powellii
Delphinium multiflorum
Epilobium occidentale
Rudbeckia occidentalis
Senecio triangularis

3. ENDEMIC

Delphinium occidentale
Delphinium reticulatum
Delphinium robustum†
Delphinium elongatum†
Delphinium ramosum†
Delphinium cucullatum†
Aconitum insigne
Aconitum lutescens
Aconitum Bakeri†
Epilobium Palmeri†
Epilobium rubescens†
Epilobium stramineum†
Mertensia ciliata
Mertensia Leonardi†
Mertensia brevistyla†
Scrophularia occidentalis
Rudbeckia ampla
Rudbeckia montana†
Helianthella quinquenervis
Cirsium Parryi†
Cirsium scopulorum†
Cirsium Centaureae†
Cirsium Eatonii
Cirsium coloradense†
Cirsium oreophilum†
Cirsium foliosum
Cirsium griseum†

F. MEADOWS

By meadows I mean here the more moist meadows of the richer bottom lands. There are also grasslands which bear hay-making grasses in the dryer portions of the valleys, which I have included in the Dry Valley Formation. The grasses of the wet meadows consist mostly of species of the tribes Agrostideae and Festuceae. Those of the latter are mostly of the tribe Hordeae and are found on the plains also. The list of grasses is given in an earlier article* and is here omitted.

* Bull. Torrey Club **43**: 635–636. 1915.

1. EASTERN AND TRANSCONTINENTAL

Carex stenophylla
Carex lanuginosa
Carex interior
Juncus Vaseyi
Juncus bufonius
Polygonum ramosissimum
Capnodes aureum
Arabis ovata
Draba nemorosa
Vicia trifida
Viola nephrophylla
Viola septentrionalis
Viola pedatifida
Artemisia biennis

2. WESTERN

Juncus longistylis
Juncus confusus
Juncodes comosum
Anticlea elegans
Polygonum sawatchense
Polygonum Watsonii
Potentilla Bakeri
Potentilla Nuttallii
Potentilla diversifolia
Drymocallis glandulosa
Lupinus argenteus
Astragalus striatus
Astragalus goniatus
Viola venosa
Viola vallicola
Oenothera Hookeri
Lavauxia flava
Collomia linearis
Orthocarpus luteus
Antennaria corymbosa
Arnica Rydbergii
Arnica fulgens
Agoseris laciniata

3. ENDEMIC

Juncus Jonesii
Carex pseudoscirpoidea
Veratrum tenuipetalum†
Calochortus Gunnisoni
Calochortus Nuttallii
Calochortus acuminatus
Polygonum Engelmannii
Claytonia rosea
Thalictrum venulosum
Thalictrum megacarpum
Arabis rhodantha
Potentilla filipes
Potentilla juncunda
Potentilla pulcherrima
Potentilla plattensis
Potentilla propinqua
Potentilla Nelsoniana
Fragaria pauciflora
Drymocallis convallaria
Trifolium Rydbergii
Trifolium Kingii†
Astragalus sulphurescens
Aragallus albiflorus
Lathyrus brachycalyx†
Viola bellidifolia
Primula incana
Anthopogon thermalis
Castilleja brunnescens†
Plantago Tweedyi
Campanula Parryi
Erigeron consobrinus†
Gnaphalium exilifolium†

Gnaphalium Grayi†
Senecio pudicus†
Senecio anacletus†
Senecio atratus†
Agoseris purpurea†
Agoseris arizonica†
Agoseris attenuata†
Agoseris arachnoidea†
Agoseris maculata†
Agoseris leptocarpa†
Ptilocalais tenuifolia†
Leontodon mexicanus†

G. SALT AND ALKALI MEADOWS

Where the soil contains salt or alkali, the meadow is more or less modified. While the salt and alkali meadows are very common in the Submontane Zone, in the Montane Zone they are uncommon, as the drainage as a rule is much better. In the South Park of Colorado, however, there are salt or alkali meadows of great extent. This may also be the case in the other two large parks. They are common in the St. Louis Valley, but this is mostly below the Montane Zone. The vegetation contains among others the following species:—

Triglochin palustris
Triglochin maritima
Alisma brevipes
Puccinellia Nuttallii
Spartina gracilis
Distichlis stricta
Agropyron Smithii
Agropyron molle
Elymus simplex
Dondia erecta
Sarcobatus vermiculatus
Monolepis Nuttalliana
Ranunculus sceleratus
Halerpestes Cymbalaria
Plantago eriopoda
Arnica foliosa
Tetradymia inermis

H. DRY VALLEYS AND BENCHLANDS

The general description of this formation and a list of the grasses it contains are given in a previous paper.* The list of grasses will here be omitted. The other plants making up the flora are as follows:

1. EASTERN OR TRANSCONTINENTAL

Carex siccata
Polygonum buxiforme
Lepidium densiflorum
Anogra latifolia
Anogra coronopifolia
Plantago Purshii
Plantago eriopoda
Laciniaria punctata
Chrysopsis villosa
Rudbeckia hirta
Solidago glaberrima

* See Bull. Torrey Club 42: 637–638. 1915.

2. WESTERN

Carex Douglasii
Carex Hoodii
Carex phaeocephala
Carex obtusata
Eriogonum stellatum
Eriogonum umbellatum
Arenaria congesta
Arenaria Burkei
Anemone globosa
Thlaspi Nuttallii
Arabis retrofracta
Peritoma serrulatum
Lupinus caespitosus
Lupinus argenteus
Gilia aggregata
Castilleja linearifolia
Aster campestris
Antennaria rosea
Antennaria flavescens
Antennaria concinna
Antennaria oblanceolata
Gymnolomia multiflora
Helianthus petiolaris
Madia glomerata

3. ENDEMIC

Eriogonum (8 species)†
Polygonum Engelmannii
Wahlbergella Drummondii
Wahlbergella comosa
Arenaria (3 species)†
Lepidium (3 species)†
Physaria (3 species)†
Lesquerella montana†
Cheirinia Wheeleri†
Arabis (5 species)†
Arabis Drummondii
Arabis connexa
Potentilla effusa
Potentilla Hippiana
Chamaerhodos Nuttallii
Lupinus aduncus
Aragallus albiflorus
Geranium (3 species)†
Cynomarathrum Nuttallii†
Gilia scariosa†
Gilia candida†
Phacelia glandulosa
Oreocarya thyrsiflora†
Oreocarya virgata†
Lithospermum multiflorum†
Campanula Parryi†
Chrysopsis resinolens
Chrysopsis caudata†
Grindelia erecta
Pyrrocoma (3 species)
Solidago (3 species)
Townsendia grandiflora
Machaeranthera (7 species)†
Erigeron flagellaris
Antennaria (5 species)
Hymenoxis helenioides†
Senecio (8 species)†
Crepis (4 species)

I. GRASSY HILLSIDES

In richer soil the principal grass is *Festuca ingrata*, whose place is taken on the southern slopes of the Southern Rockies by *F. arizonica* and in less degree by *F. Thurberi*. The composition of the flora consists of the following species.

1. EASTERN AND TRANSCONTINENTAL

Calamagrostis purpurascens
Poa crocata
Festuca rubra
Carex concinna
Carex Halleri
Ibidium strictum
Draba nemorosa

2. WESTERN

Carex Rossii
Ibidium porrifolium
Allium Geyeri
Eriogonum ovalifolium
Polygonum sawatchense
Eurotia lanata
Cerastium strictum
Draba nitida
Sieversia grisea
Sieversia ciliata
Collomia linearis
Phacelia sericea
Lappula floribunda
Campanula petiolata
Aster apricus
Macronema suffruticosum
Antennaria pulcherrima
Antennaria anaphaloides
Balsamorrhiza sagittata
Wyethia amplexicaulis
Arnica Parryi
Arnica mollis

3. ENDEMIC

Muhlenbergia (3 species)†
Poa (8 species)†
Festuca ingrata
Festuca saximontana
Festuca (3 other species)†
Allium Brandegei
Allium recurvatum
Erythronium parviflorum†
Erythronium utahense
Cerastium (4 species)
Draba (3 species)
Lesquerella curvipes†
Lithophragma australis†
Potentilla (5 species)
Pachylophus macroglottis
Pachylophus hirsutus
Amarella scopulorum
Dasystephana affinis
Dasystephana Forwoodii
Tessaranthium (5 species)†
Phlox Kelseyi
Mertensia (7 species)†
Valeriana (4 species)†
Solidago (3 species)
Aster andinus
Erigeron viscidus†
Townsendia strigosa†
Helianthella uniflora
Tetraneuris leptoclada
Tetraneuris lanigera
Senecio Fendleri

K. HOG-BACKS AND DRY RIDGES

The flora of the hog backs in the Montane Zone, especially in its upper part, resembles that of the Subalpine Zone; in the lower regions there are many of the species of the dry plains added. Besides these t..ere are a few restricted to the Montane Zone; nearly all of these are endemics. The flora consist of the following:

1. EASTERN OR TRANSCONTINENTAL

Juniperus sibirica
Carex praticola
Carex stenophylla
Calamagrostis purpurascens
Bouteloua gracilis
Koeleria gracilis
Poa crocata

2. WESTERN

Lewisia rediviva
Oreobroma pygmaea
Oreobroma nevadensis
Draba lutea
Sedum stenosepalum
Petrophytum caespitosum
Leptodactylon purgens

3. ENDEMIC

Lesquerella alpina
Eriogonum (6 species)†
Physaria vitulifera
Physaria acutifolia
Trifolium nanum
Trifolium dasyphyllum†
Kentrophyta aculeata
Kentrophyta Wolfii†
Aragallus minor
Phlox depressa
Phlox Kelseyi
Chrysopsis pumila
Townsendia strigosa†
Townsendia montana†
Erigeron ursinus
Antennaria rosulata†
Tetraneuris lanigera†
Tetraneuris brevifolia
Senecio Purshianus
Senecio Fendleri†
Senecio werneriaefolius†

SAND HILLS AND SAND-HILL DRAWS

While the best developed sand and sand-hill draws are found in the region of the Great Plains east of the Rockies, and in the desert plains of the Great Basin west of the same; they are found also in the Submontane and Montane Zones. In the latter the sand-draws are found mostly in the bottoms of the canyons and the

sandhills in the so-called "Parks" of Colorado and in some of the broader river valleys. Most of the species characteristic of both are also found on the Great Plains and are such as have migrated along the rivers to higher altitudes. The following species are components of the flora. None of these are transcontinental or common to the Rockies and the Canadian Zone. A few are common to the Rocky Mountains and the Sierra Nevada Region, but most of them are endemics, either of the Great Plains or the Great Basin, or both.

Eriocoma hymenoides
Muhlenbergia pungens
Stipa speciosa
Oryzopsis Webberi
Sitanion elymoides
Arenaria confusa
Arenaria polycaulos
Peritoma serrulatum
Epilobium paniculatum
Gayophytum intermedium
Gayophytum ramosissimum
Gayophytum racemosum
Nuttallia multiflora
Nuttallia densa
Nuttallia speciosa
Cryptantha Torreyana
Lithospermum multiflorum
Helianthus petiolaris

M. ROCK SLIDES

The rock slide flora of the upper Montane Zone resembles that of the Subalpine, which has already been described.* In lower altitudes the following species appear, all of which are endemic to the Southern Rockies except *Viola biflora*, which is found also in Europe.

Elymus ambiguus†
Aquilegia saximonana†
Aragallus Halliі†
Limnobotrya montigena†
Viola biflora†
Pseudopteryxia anisata†
Pseudopteryxia aletifolia†
Polemonium confertum†
Polemonium mellitum†
Polemonium Brandegei†
Pentstemon stenosepalus†
Senecio Fendleri†
Senecio amplectens†
Senecio canovirens†

NEW YORK BOTANICAL GARDEN.

* Bull. Torrey Club 44: 453. 1917.

Studies of West Indian plants—X

NATHANIEL LORD BRITTON

60. UNDESCRIBED SPECIES FROM TRINIDAD

Eleocharis savannarum sp. nov.

Rootstocks very slender, elongated; culms filiform, weak, smooth, 6–15 cm. long, the upper sheath membranous, its mouth oblique; spikelet ovoid, 3–4 mm. long; scales oblong or ovate-oblong, about 2 mm. long, obtuse, nearly white with a greenish midvein; achene trigonous, obovoid, about 0.5 mm. long, truncate; tubercle low, nearly flat, apiculate; bristles none.

Moist hole on the O'Meara Savanna, Trinidad (*Britton 2491*).

Eleocharis oropuchensis sp. nov.

Roots fibrous, finely filiform; culms finely filiform, densely tufted, weak, 5 cm. long or less, the upper sheath membranous, oblique at the summit. Spikelets terminating culms, and sessile at the base of the plant; compressed, 2–3 mm. long, ovate, about 6-flowered; their scales ovate-oblong, pale or brown with pale margins and keel, subdistichous, blunt, 1.5 mm. long; style 3-cleft; achene trigonous, smooth, pale, about 0.5 mm. long, about as long as the 3 or 4 bristles; tubercle conic, one fourth as long as the achene.

In mud in sunny, grassy situations, Trinidad; type from Oropuche Lagoon (*Britton, Hazen and Freeman 1155*, March 29, 1920).

I am indebted to Mr. N. E. Brown for comparing this little plant with West Indian and South American species in the Kew Herbarium, where he was unable to match it. He remarks upon its unusual character of having both terminal and basal spikelets, and compares it with *Chaetocyperus Jamesoni* Steud. from Guayaquil, Ecuador (*Jameson 369*), pointing out important differences, however.

Rynchospora aripoensis sp. nov.

Perennial by short horizontal rootstocks; culms filiform, tufted, smooth, erect, 2–4 dm. high, longer than the filiform leaves. Spikelets few, 2 mm. long, ovoid, acute, 1-fruited, sessile in 1 or 2 small clusters subtended by a filiform bract 1–3 cm. long; scales

ovate, brown, acute; bristles none; achene obovate-elliptic, 1 mm. long, smooth, light brown; tubercle compressed-conic, acute, one third to one half as long as the achene.

Grassy plain, Aripo Savanna, Trinidad (*Britton 2934*). Perhaps most nearly related to *R. Chapmani* M. A. Curtis of the eastern United States.

Bromelia aurea sp. nov.

Leaves numerous, rigid, linear, long-attenuate, 6–8 dm. long, about 3 cm. wide, armed with distant curved prickles 4–5 mm. long. Scape rather slender, shorter than the basal leaves, bearing several prickle-armed small leaves; inflorescence brownish-floccose, about 3 dm. long; bracts lanceolate, membranous, acuminate, 2–4 cm. long; bractlets ovate, membranous, strongly nerved, mucronate, about 1 cm. long; flowers 2 to several together, the clusters 2–3 cm. apart; sepals similar to the bractlets, about 1 cm. long; petals linear, bright yellow, about 3 cm. long and 2 mm. wide.

Wooded hillside, near western end of Monos Island, Trinidad (*Britton, Britton and Brown 2736*). In flower April 4, 1921. Related to *B. chrysantha* Jacq. of Venezuela.

Aechmea porteoides sp. nov.

Leaves firm in texture, linear with a somewhat broadened base, about 8 dm. long, 4–7 cm. wide, sharply acute, the margins armed with very numerous, approximate, nearly black, slightly curved spinules 4 mm. long or less; inflorescence paniculate, as long as the leaves or longer, its ultimate branches spreading, about 6 cm. long, stellate-pubescent, slender, few-flowered; bracteoles subulate-acicular, 4–6 mm. long; flowers blue, about 20 mm. long; sepals striate, about 1 cm. long, with a terminal spinule 2–3 mm. long; ovary about 1 cm. long, oblong.

On the ground in mountain forests, Trinidad. Type from Mount Tocuche (*Britton, Hazen and Mendelson 1342*). In flower April 5, 1920. Related to *A. Fendleri* of Venezuela.

Tillandsia viscidula sp. nov.

Basal leaves tufted, linear, 2.5–3.5 dm. long, flat, gradually narrowed upward, abruptly contracted at the apex and short-acuminate, the base expanded and dark-blotched. Stem 3–5 dm. high, erect, bearing leaves similar to the basal ones, but smaller, the upper ones 7 cm. long or less; panicle 3–5 dm. long, few- to several-branched, viscid; flowers yellow, distant, sessile, about 2

cm. long, at first appressed, later spreading, about as long as the bracts.

On trees, Trinidad. Type from Moruga (*Britton and Broadway 2430*). Related to *T. aloifolia* Hook.

Alpinia silvicola sp. nov.

Rootstocks rather stout, scaly. Sterile stem 2–3 m. high; leafy; leaves oblong, thin, glabrous, closely many-veined, 3–5 dm. long, 6–10 cm. wide, the apex acuminate, the base narrowed, the petioles 1–2.5 cm. long, the sheaths striate; lower leaves reduced to thin sheathing scales. Fertile stems about 3 dm. high, pubescent above, with a few, narrow scales 3–4 cm. long; spike dense, several- to many-flowered, 7–10 cm. long; bracts 1-flowered, shorter than the flowers; calyx about 1.5 mm. long, pubescent, its lobes broad; corolla yellow, about 2 cm. long; fruit oblong, about 3 cm. long, its juice blue-black.

Forests of the northern mountain range, Trinidad. Type from Mount Tocuche (*Britton, Hazen and Mendelson 1301*).

Calathea trinitensis sp. nov.

Leaves erect, oblong to oblong-lanceolate, glabrous, the blade up to 1 m. long and 3 dm. wide, rather shorter than the slender petiole, rather abruptly narrowed at the base, the apex abruptly tipped, the midvein prominent, the innumerable lateral veins close together. Scape glabrous, about 7 dm. high; spike dense, about 2 dm. long; bracts oblique, many-veined, 3–4 cm. long, their spreading tips acute; flowers yellow, about 3 cm. long, the segments linear, parallel-veined, acute.

Forest, heights of Aripo, Trinidad (*Britton and Freeman 2360*). In flower March 16, 1921.

Ficus ierensis sp. nov.

A tree up to 10 m. high or higher, glabrous. Leaves broadly elliptic or elliptic-orbicular, subcoriaceous, pinnately 5- to 9-veined on each side of the rather prominent midvein, rounded at the apex, cordate at the base, 10–20 cm. long, the stout petiole one fourth to one third as long as the blade; fruiting peduncles slender, about 1 cm. long; fruit globose, 12–18 mm. in diameter; bracts 2 or 3, broad, rounded, nearly as long as the fruit; ostiolum sunken, about 2 mm. in diameter.

Hillsides in relatively dry districts, Trinidad. Type from North Post Road (*Britton, Hazen and Mendelson 774*). Similar

to *F. crassinervia* of Hispaniola, to which species it has been referred, and also related to *F. Urbaniana* Warburg, of the Lesser Antilles.

Ficus arimensis sp. nov.

Twigs stout. Leaf-blades firm in texture, obovate, about 2 dm. long and twice as long as wide, distantly pinnately veined, the base subcuneate, the apex rounded and short-cuspidate; fruit subglobose, sessile, about 8 mm. in diameter (immature).

Arima, Trinidad (*J. Dannouse*). Collected in 1905.

Ficus Mendelsonii sp. nov.

A tree up to 16 m. high. Leaves elliptic to obovate-elliptic, the blade thin, smooth, 10–15 cm. long, about twice as long as wide, distantly pinnately veined, triple-veined just above the base, the base rounded or obtuse, the apex abruptly short-acuminate; petioles slender, 2–6 cm. long; peduncles slender, 1–2 cm. long; fruit globose, pale, 10–15 mm. in diameter, the ostiolum deeply concave; basal bracts 2, triangular-ovate, about 2 mm. long.

Forests in moist or wet districts, Trinidad. Type from the northern hills between North Post and Maqueripe (*Britton, Hazen and Mendelson 879*).

Phoradendron chaguaramasanum Trelease sp. nov.

Scarcely forked, the moderate branches with basal cataphyls only, androgynous?. Internodes short (2 × 10–30 mm.), at first papillately roughened, quadrangular and somewhat 4-winged, little flattened. Cataphyls a single pair, nearly basal, deeply notched. Leaves spatulate-oblong, obtuse to subtruncate, scarcely 1 × 2.5 cm., cuneately subpetioled for 5 mm., fleshy, drying yellow, 1- or obscurely 3-nerved from the base. Spikes solitary, very short (about 5 mm.), with 2 or 3 very short characteristically 4-flowered joints; peduncle about 1 mm. long; scales ciliolate. Immature fruit subglobose, scarcely 2 mm. in diameter, reddish, verrucose; sepals yellow, erect, not meeting.

Chaguaramas, Trinidad (*Britton 2718*, the type, April 4, 1921).

Phoradendron caerulescens Trelease sp. nov.

Pseudodichotomous, the moderate branches with basal cataphyls only, androgynous?. Internodes short (2–3 × 10–20 mm.), smooth, glossy, quadrate, the upper ancipitally dilated to a width of 4 mm. below the nodes. Cataphyls a single pair, basal, glossy brown, tubular-bifid. Leaves round-elliptical, submucronately

acuminate, 1.5 × 2–2.5 cm., cuneately subpetioled for about 5 mm., cartilaginous-margined, about 5-nerved, at first delicately blue-glaucous. Spikes solitary, short (scarcely 15 mm.) with 3 or 4 short 4-flowered joints; peduncle 1 mm. long; scales slightly ciliolate. Fruit (immature) small, globose, deeply immersed, verrucose: sepals inflexed.

Chacachacare Island, Trinidad (*Britton and Hazen 1726*, April 13, 1920), the type; also from the same locality, on *Capparis* (*Britton, Freeman and Watts 2701, 2708*, 1921).

Of the *Emarginatae*, but with inflexed sepals, and in this, as well as in its flattened twigs, related to *P. Ottonis* Eichler of Venezuela.

Seguiera ierensis sp. nov.

A climber with slender twigs and branches, the prickles 2–25 mm. long. Leaves oblong or oblong-lanceolate, 6–16 cm. long, acute or acuminate at the apex, narrowed or obtuse at the base, or the upper ones smaller and obtuse, the petioles 2–7 mm. long; panicles many-flowered, 5–9 cm. long, puberulent; pedicels 2–3 mm. long; perianth-segments unequal, elliptic to obovate, 3–3.6 mm. long, rounded, concave; stamens about 20 with filiform filaments and linear anthers.

McBean Estate, Carapachaima, Trinidad, April 30, 1918 (type). Forest, Ortoire River, Guayaguayare Road (*Britton, Freeman and Nowell 2527*, barren).

Seguiera cordata sp. nov.

Twigs slender; prickles stiff, nearly straight, about 8 mm. long. Leaves broadly ovate, subcoriaceous, glabrous, 14 cm. long or less, cordate or subcordate at the base, acute at the apex, or small ones obtuse at both ends, the venation prominent beneath, impressed above, the stout petioles 6–8 mm. long; panicles many-flowered, about 6 cm. long; bractlets ovate, 1 mm. long, about as long as the pedicels or a little shorter; sepals 1–1.5 mm. long.

Lobajos near Erin, Trinidad (*Trinidad Herbarium 9122, W. E. Broadway*, May 14, 1920).

Chrysobalanus savannarum sp. nov.

An irregularly branching shrub 0.5–4 m. high, the glabrous twigs slender. Leaves obovate to elliptic-obovate, 1.5–3.5 cm. long, strongly reticulate-veined above, faintly veined beneath, obtuse or acutish at the apex, narrowed at the base, the petioles 1.5–2

mm. long; flowers few, in small axillary clusters not longer than the leaves, or these terminating short leafy twigs; pedicels short, puberulent; calyx silky-pubescent, its lobes short, broad, obtuse; petals cuneate-spatulate, rounded at the apex, 3–3.5 mm. long; drupe oblong or narrowly oblong-obovoid, obtuse, about 8 mm. long and 4 mm. in diameter.

Grassy plain, Aripo Savanna, Trinidad (*Britton, Hazen and Freeman 2005*, April 21, 1920).

Acacia quadricostata sp. nov.

A woody vine, up to 8 m. long, the old stems 4-ribbed or 4-flanged, about 8 cm. thick near the base, the twigs 4-angled, armed with recurved prickles about 3 mm. long. Leaves 2-pinnate, 6–17 cm. long; stipules wanting; petiole slender, bearing a sessile, circular gland; rachis glabrous, sometimes bearing a few minute prickles; rachilla very slender, angular; leaflets 35 pairs or fewer, sessile, linear-lanceolate, acutish, 6–8 mm. long, about 1 mm. wide, truncately inequilateral at the base, the midvein somewhat eccentric, the lateral veins few, glabrous, except for a characteristic line of yellowish hairs on the underside of the midvein near the base; legume linear-oblong, flat, densely puberulent, 5–9 cm. long, nearly 2 cm. wide, narrowed at the base with a short stipe, acute and short-tipped; seeds orbicular, dark brown, about 7 mm. in diameter.

Hillside, Chacachacare Island, Trinidad (*Britton, Freeman and Watts 2685*), in fruit April 3, 1921. The prickles are persistent upon the old stems and branches.

Erythrina pallida Britton and Rose sp. nov.

A small tree, 4 meters high; young growth puberulent; second year growth glabrate with shining gray bark; spines at base of leaves stout, reflexed, 6–8 mm. long; leaves large; rachis 2 cm. long or more, glabrous; leaflets 3, broadly ovate, sometimes obliquely so, acuminate, 12–15 cm. long, green above, very pale beneath, glabrous on both sides at least when mature; inflorescence subsessile, paniculate, 1–2 dm. long; pedicels stout, about 1 cm. long; calyx 1.5 cm. long, nearly truncate, except a small protuberance on the lower side; corolla salmon-colored, narrow, 7 cm. long; fruit with a long slender stipe 3 cm. long; tipped with a rigid persistent style, 2 cm. long, moniliform, 8–10-seeded; seed 8 mm. long, 6 mm. broad.

Hillsides and roadsides, Trinidad. Type from roadside near Carenage (*Britton 2656*), April 4, 1921. Commonly planted as a fence tree in Trinidad.

Elaphrium trinitensis Rose sp. nov.

A gnarled tree, 5 meters high, fragrant; branches glabrous, often short and spur-like, with brownish bark; leaves simple, borne at the end of stubby branches, the petiole not winged, 12 mm. long or less, the blade broadly ovate, 2.5 cm. long or less, entire, glabrous; flowers solitary or in small panicles sometimes only 3- or 4-flowered; pedicels 3 to 5 mm. long, glabrous; fruit 3-angled, glabrous, 8 to 10 mm. long; nutlet white, 3-angled.

Western end of Monos Island, Trinidad (*Britton, Britton and Brown 2739*), April 4, 1921.

Phyllanthus graminicola sp. nov.

Annual, with fibrous roots, glabrous; stem slender, erect, becoming much branched, 1–3 dm. high, the branches almost filiform. Leaves oblong-elliptic, thin, faintly pinnately veined, 4–10 mm. long, the apex obtuse, the base more or less narrowed, the petiole about 1 mm. long; stipules minute; flowers nearly sessile; calyx of the pistillate flowers deeply 6-parted, the linear segments at length about 1 mm. long; fruit depressed, 1.5 mm. in diameter; seeds about 0.6 mm. long.

Moist grassy situations at low elevations, Trinidad. Type from grassy roadside, Carenage (*Britton and Hazen 12*). In fruit February 25, 1920. Related to *P. carolinensis* Walt. of the eastern United States, which has larger fruit and seeds and broader pistillate calyx-segments.

Clusia tocuchensis sp. nov.

A tree about 18 m. high, the twigs rather stout. Leaves borne at the ends of the twigs, obovate, coriaceous, glabrous, about 10 cm. long, 4–5 cm. wide, rounded at the apex, cuneate at the base, rather finely pinnately veined, the short stout petiole only about 5 mm. long; fruit globose, 10–15 mm. in diameter; carpels about 7; styles stout, 3–4 mm. long; stigmas flat, obliquely oblong, the center depressed.

Forest, Mount Tocuche, Trinidad (*Britton, Hazen and Mendelson 1247*). In fruit April 3–5, 1920.

Terminalia nyssaefolia sp. nov.

A tree up to 20 m. high, the slender twigs glabrous. Leaves chartaceous, obovate, 7–12 cm. long, 4–6 cm. wide, entire, abruptly short-acuminate at the apex, cuneate at the base, strongly

reticulate-veined, glabrous and bright green above, pale green, dull and strigose-pubescent on the veins beneath, the strigose and ciliate petioles 5–10 mm. long; fruit compressed, 2-winged, broader than long, 2–3.5 cm. broad, 1.5–2.5 cm. long, notched at the apex, at base abruptly contracted into a stalk about 2 mm. long, the thin striate wings about one half as wide as the seed-bearing part.

Coastal woods, Manzanilla, Trinidad (*Britton 2177*). In fruit (fruit fallen) March 9, 1921.

Combretum trinitense sp. nov.

Vine-like, woody, the stems up to 6 m. long, the branches long and slender, the twigs glandular. Leaves elliptic or elliptic-lanceolate, chartaceous, 8–12 cm. long, 5 cm. wide or less, the midvein prominent beneath, impressed above, the lateral veins about 7 on each side of the midvein, slender, curved upwardly, the upper surface glabrous, reticulate-veined, the under surface impressed-glandular, the glandular petioles 6–7 mm. long; fruiting racemes 6–10 cm. long; fruit oblong, 10–15 mm. long, the four thin wings glandular, the pedicels about 2 mm. long.

Hillside thicket, Chacachacare Island, Trinidad (*Britton, Freeman and Watts 2699*). In fruit April 3, 1921.

Myrcia arimensis sp. nov.

A small tree, the slender young twigs rather densely strigose. Leaves elliptic to elliptic-ovate, chartaceous, 4–6 cm. long, reticulate-veined, punctate, dark green and shining above, pale green beneath, the apex acute, the base narrowed, the strigose or glabrate petioles 3–5 mm. long; panicles several- to many-flowered, 5–7 cm. long, their slender branches spreading; flowers nearly or quite sessile; calyx-lobes rounded; immature fruit globose, about 5 mm. in diameter.

Arima, Trinidad (*J. Dannouse*, Feb. 10, 1905).

Eugenia Baileyi sp. nov.

A tree up to 12 m. high or higher, the twigs terete, rather slender. Leaves coriaceous, glabrous, broadly elliptic, 12–16 cm. long, 9–12 cm. wide, rounded at the apex, obtuse at the base, strongly pinnately veined, abundantly punctate, the stout petioles 1–1.5 cm. long; fruit lateral, oblong or ovoid-oblong, about 2 cm. long and 1 cm. thick, pale, puberulent, nearly sessile.

Forest, Morne Bleu, Trinidad (*Britton, Freeman and Bailey 2246*). In fruit March 13, 1921.

Hydrocotyle Hazenii Rose sp. nov.

A delicate creeping plant, rooting at the nodes; petioles slender, 2 to 5 cm. long, pubescent and more pronounced just below the blade; blade nearly orbicular, 2.5 cm. in diameter or less, glabrous and paler beneath, somewhat hairy or glabrate above, the sinus usually narrow, the margins doubly crenate, the crenations low and broad; peduncle slender, hairy above, longer than the petiole; flowers in a small compact umbel; pedicels 1 to 2 mm. long.

Among wet rocks, Maracas Waterfall, Trinidad (*Britton, Hazen and Mendelson 1660*, April 10, 1920).

Psammisia recurvata sp. nov.

Stems branched, about 5 m. long. Leaves coriaceous, glabrous, elliptic-ovate, 10–20 cm. long, 7–10 cm. wide, pinnately 7-veined from near the base, with numerous curved transverse veinlets, the venation impressed above, prominent beneath, the apex acute, the base narrowed, the stout petiole 1–2 cm. long; flowers several in short axillary racemes; bractlets ovate, acute, about 2 mm. long; pedicels stout, recurved, glabrous, 2–3 cm. long; ovary subglobose, glabrous; calyx subcampanulate, persistent, about 6 mm. long in fruit, its lobes rounded, apiculate, their margins thickened; corolla-tube about 4 cm. long, red, the short limb white; fruit globose, about 1 cm. in diameter, many-seeded.

Forest bank, near summit of Mount Tocuche, Trinidad (*Britton, Hazen and Mendelson 1294*).

Specimens of this plant were mixed by Grisebach with those of another and the complex described by him (Fl. Br. W. I. 143) as *Thibaudia latifolia* Griseb., subsequently referred by Bentham and Hooker to *Vaccinium*; it would appear that the name *latifolia* should go with this other species, which, however, is not a good *Vaccinium*.

Sophoclesia trinitensis sp. nov.

Pendent from forest trees; stem slender, sparingly branched, short-villous when young, 1–4 m. long. Leaves subcoriaceous, glabrous or nearly so, ovate or some of them ovate-lanceolate, 1.5–3.5 cm. long, from about one half to two thirds as wide as long, triplinerved with a pair of delicate veins at the base, this venation rather distinct beneath, obscure above, the apex bluntly pointed, the base rounded or subtruncate, the villous petiole about 2 mm. long; peduncles filiform, glabrous, somewhat shorter than the leaves; ovary globose, glabrous or with a few hairs; corolla white,

glabrous, about 5 mm. long; fruit blue or mauve, glabrous, about 5 mm. in diameter.

Forests, in wet districts, Trinidad. Type from Mount Tocuche (*Britton, Hazen and Mendelson 1316*). In flower and fruit April 3, 1920.

Sophoclesia major (Griseb.) Benth. & Hook., also of Trinidad, differs in its ovate-orbicular rounded, subcordate leaves and densely pilose ovary.

Cavendishia Urichiana sp. nov.

A much-branched, woody vine, up to 6 m. long, glabrous throughout, the branches slender. Leaves oblong-lanceolate to oblong-elliptic, somewhat fleshy, dark green above, bright green beneath, chartaceous in drying, triple-nerved, 10–15 cm. long, 3–5 cm. wide, the nerves rather prominent beneath, slightly impressed above, the apex acuminate, the base narrowed, the petiole 8–10 mm. long, rather stout; flowers fascicled on the twigs or in the leaf-axils, bracteolate, the bractlets ovate, acute, 2–3 mm. long; pedicels slender, 8–20 mm. long; calyx-limb with 5 short acute teeth, expanded above the ovary; corolla-tube subcylindric, about 2 cm. long, scarlet, the limb 4 mm. long, white, with 5 ovate-lanceolate teeth; stamens shorter than the corolla; style slender, exserted; immature fruit subglobose, crowned by the calyx-limb.

Climbing on forest trees, Heights of Aripo, Trinidad (*Britton and Freeman 2364*, March 16, 1921). Specimens were brought from the same place a few days earlier by Mr. F. W. Urich, Entomologist of the Trinidad Department of Agriculture, and he guided us to it. The plant from which the type specimens were taken is wonderfully elegant when in bloom, displaying long wands of the scarlet, white-tipped flowers, and is locally called "clove-plant."

Diospyros ierensis sp. nov.

A tree, 12 m. high or higher, the twigs and leaves glabrous. Leaves chartaceous, oblong to elliptic, 10–15 cm. long, 7 cm. wide or less, bluntly short-acuminate at the apex, narrowed or obtuse at the base, reticulate-veined, the venation prominent beneath, the stout petiole 10–14 mm. long; fruiting calyx 2–2.5 cm. broad, nearly flat, wrinkled, 4-lobed, the lobes broad and short; fruit subglobose, about 4 cm. in diameter (not quite mature); seeds about 8.

Forest near the summit of Mount Tocuche, Trinidad (*Britton, Hazen and Mendelson 1243*). In fruit April 5, 1920.

Specimens collected by J. Dannouse at Guanapo, Trinidad, showing imperfect flowers about 1 cm. wide (*Trinidad Herb. 6415*) are probably referable to this species.

Chrysophyllum (?) **minutiflorum** sp. nov.

A tree about 15 m. high, the young leaf-buds puberulent, otherwise glabrous. Leaves thin-chartaceous, oblong-lanceolate, 13 cm. long or less, 2.5–5 cm. wide, long-acuminate at the apex, narrowed at the base, delicately pinnately and reticulate-veined, the rather slender petioles 10–15 mm. long; flowers green, several to many in sessile axillary fascicles; bractlets minute; pedicels very slender, thickened upward, 5–8 mm. long; calyx about 1.5 mm. long, its 3 or 4 lobes rounded; corolla-segments 3 or 4, minute; stamens 3 or 4.

Forest, Arima, Trinidad (*Britton, Britton and Brown 2403*). In young flower March 18, 1921.

The flowers are too young to enable the generic status of this tree to be certainly determined. Mr. N. E. Brown has identified specimens as the same as Crueger's *no. 247* in the Kew Herbarium, from Trinidad, which is a leafy branch and a detached fruit. The leaves are also the same as those of Trinidad Herbarium *no. 1454*, also leafy shoots with the remains of a fruit which was, apparently, about 2 cm. long, attached, and with some flowers even younger than those of our *2403*.

Evolvulus bocasanus sp. nov.

Perennial, shrubby, branched, 3–4 dm. high, the branches nearly erect or ascending, strigose. Leaves lanceolate to oblong, 2–5 cm. long, 5–15 mm. wide, strigose on both sides, acute or obtuse at apex, obtuse at base, pinnately few-veined, the veins nearly parallel, the petiole 1–2 mm. long; peduncles filiform, axillary, 3 cm. long or less, 1–few-flowered; bracts lanceolate, acuminate, 2–3 mm. long; pedicels 2–10 mm. long; calyx strigose, 3–4 mm. long, 5-lobed to about the middle, the lobes lanceolate, acute; corolla rotate, bright blue, 8–15 mm. broad.

Hillsides, Bocas Islands, Trinidad; type from Chacachacare (*Britton, Freeman and Watts 2674*). In flower April 3, 1921. This is the species recorded from Trinidad by Grisebach as *Evolvulus alsinoides* L., at least in part.

Solanum ierense sp. nov.

A shrub about 2 m. high, the slender unarmed branches divergent, glabrous, the young twigs stellate-pubescent. Leaves thin, ovate or elliptic-ovate, 5 cm. long or less, delicately pinnately few-veined, sparingly stellate-pubescent above, densely stellate-pubescent beneath, the apex acute or obtuse, the base obtuse or narrowed, the slender petioles 4–10 mm. long; flowers solitary or geminate (rarely 3) in the axils on nearly filiform pubescent peduncles 2.5 cm. long or less; calyx stellate-pubescent, 5–7-cleft, the lobes linear-lanceolate, acuminate; corolla white, 5–6-cleft, its lobes linear-lanceolate, acuminate, 10 mm. long; stamens 5 or 6, all alike, the anthers somewhat attenuate, 8 mm. long, the filaments 1–2 mm. long; immature berry globose, about 7 mm. in diameter.

Hillside, Chacachacare, Trinidad (*Britton, Freeman and Watts 2706*). In flower and young fruit April 3, 1921.

Solanum Hazenii sp. nov.

A tree up to about 5 m. high with a woody trunk about 1.5 dm. in diameter. Leaves broadly elliptic, rather thin and flaccid, 10–20 cm. long, 8–15 cm. wide, strongly pinnately veined on the under side, the apex short-acuminate, the base obtuse, the upper surface finely stellate when young, glabrous when old, the under surface persistently stellate-tomentulose, the stout, stellate-tomentulose petioles 3 or 4 cm. long; inflorescence stalked, about equalling the leaves, many-flowered, tomentulose; pedicels short; flower-buds subglobose, rounded, tomentulose; calyx tomentulose, deeply lobed, 5 mm. long, the lobes obtuse; corolla white, 20 mm. broad, 5-lobed to below the middle, the lobes broadly ovate, acute; stamens all alike, the anthers 3 mm. long, about twice as long as the filaments; berry globose, black, about 8 mm. in diameter.

Hillsides, northwestern parts of Trinidad mainland and on the adjacent Bocas Islands. Type from Saddle Road (*Britton and Hazen 156*).

Solanum capillipes sp. nov

A shrub, about 2 m. high, the slender young branches pilose, the older branches glabrous. Leaves oblong-elliptic to elliptic-lanceolate, membranous, all alike, pinnately veined, glabrous, somewhat darker green above than beneath, 10–15 cm. long, 3–6 cm. wide, acuminate, the slightly inequilateral base narrowed, the petioles about 1 cm. long; racemes lateral, few-flowered,

glabrous; peduncles very slender, 2.5 cm. long or less; pedicels filiform, spreading, 1–3 cm. long; calyx obconic, about 5 mm. long; corolla white, deeply lobed, 5–6 mm. broad; stamens all alike, the oblong anthers obtuse, 1.5 mm. long, nearly sessile; fruit globose, 6–7 mm. in diameter.

Forests in wet districts, southern Trinidad. Type from forest, Ortoire River, Guayaguayare Road (*Britton, Freeman & Nowell 2521*).

Codonanthe (?) **triplinervia** sp. nov.

A somewhat fleshy, epiphytic woody vine, 1–2 m. long, the young twigs sparingly pubescent. Leaves ovate or ovate-lanceolate, 8 cm. long or less, 2–3.5 cm. wide, glabrous, rather thin, triplinerved, the apex acuminate, the base narrowed or obtuse, the slender, sparingly pubescent petioles 6–12 mm. long; flowers solitary or 2–4 together at the nodes; bractlets linear, pubescent, acute, 6 mm. long or less; pedicels slender, pubescent, about as long as the bractlets; calyx 10–12 mm. long, sparingly pubescent below, deeply cleft, its segments linear-oblong, acute; corolla 3–3.5 cm. long, white, the throat yellow within, its tube slightly bent just above the gibbous base, about 1 cm. long, the subcampanulate throat about 1.5 cm. long, the somewhat spreading limb with rounded, translucent lobes.

On forest trees, Trinidad; type from Ortoire River, Guayaguayare Road (*Britton, Freeman and Nowell 2543*). In flower March 25, 1921.

Sabicea trinitensis Standl. sp. nov.

Vine, the stems about 2 m. long, pubescent with dense short ascending rufescent hairs; stipules 5–6 mm. long, rounded-ovate, obtuse or subacute, finely ciliolate but otherwise glabrous; petioles 8–14 mm. long, densely hirtellous with ascending hairs; leaf-blades elliptic or oblong-elliptic, 9–10.5 cm. long, 4.5–6 cm. wide, acute or subacute, abruptly contracted at base, hispidulous above along the costa, elsewhere scaberulous, appressed-pilose beneath along the veins, glabrate elsewhere; flowers few, sessile in the leaf-axils, subtended by two green bracts similar to the stipules; hypanthium about 3 mm. long; glabrous or with a few appressed white hairs; calyx-lobes linear, 2–3 mm. long, green, plane, obscurely ciliolate; corolla appressed-hirsute, the tube 6–7 mm. long, the lobes lanceolate, acuminate, 3 mm. long.

Type in the U. S. National Herbarium, No. 1,059,334, collected in a thicket of the O'Meara Savanna, Trinidad, March 22, 1921 (*Britton 2489*).

The proposed species is most nearly related to *S. hirsuta adpressa* Wernham, which has been reported from Trinidad. It differs essentially, however, in the short narrow calyx-lobes and in the short scant pubescence of the upper leaf-surface.

61. UNDESCRIBED SPECIES FROM JAMAICA

Pilea Maxoni sp. nov.

Stem trailing, freely rooting at the nodes, 3–6 dm. long or longer, rather densely pubescent, the pubescent branches erect, 6–12 cm. high or higher. Stipules ovate-orbicular, rounded, submembranous, 3–6 mm. long, sometimes broader than long; leaf-pairs nearly equal; leaves ovate, regularly crenate, 1–3 cm. long, acute, acuminate, or some of the smaller ones obtuse at the apex, obliquely obtuse or rounded at the base, 3-nerved from above the base, sparingly pubescent and reticulate-veined beneath, the upper surface nearly veinless, with long, flat scattered hairs and some short ones, the linear glochides largely marginal only; petioles slender, pubescent, as long as the blades or shorter; pistillate inflorescence paniculate, slender-peduncled, about 6 cm. long, the staminate shorter; sepals lanceolate or oblong-lanceolate.

Rocky woods in the Cockpit Country, Jamaica. Type, *Maxon & Killip 1555*, from near Mocho, above Catadupa, April 3, 1920; previously collected near Troy, June 28, 1904 (*Maxon 2834*), our specimen of this number barren.

Zanthoxylum Harrisii P. Wilson sp. nov.

An unarmed tree 15–18 m. high, with grayish-brown branches. Leaves equally pinnate, 2–3.5 dm. long, the petioles and rachis terete, glabrous or nearly so; leaflets 8–12, alternate or sometimes opposite, short-petioluled, elliptic-lanceolate to elliptic, 7–15 cm. long, 4–5 cm. broad, coriaceous, acuminate at the apex, inequilateral at the base, entire, lustrous above, the midvein impressed, paler beneath, the midvein prominent; inflorescence terminal or lateral in the axils of the upper leaves, the branches densely puberulent; staminate flowers: calyx lobes 5, triangular-ovate; petals 5, lanceolate, 3 mm. long, 1.5 mm. broad, stamens 5, exserted.

St. George's, Portland, Jamaica, March 30, 1918 (*Harris 12878*).

Salvia clarendonensis sp. nov.

A spreading shrub with weak stems and branches 2–3 m. long, the twigs, petioles and inflorescence puberulent. Leaves slender-

petioled, membranous, oblong-lanceolate, serrulate, glabrous above, puberulent beneath, acuminate at the apex, narrowed or obtuse at the base, 5–15 cm. long; racemes slender, 7–10 cm. long; bracts linear-lanceolate, the lower ones sometimes 1 cm. long; pedicels very short; calyx about 5 mm. long, its ovate cuspidate teeth shorter than the tube; corolla rose-purple, 1–1.2 cm. long.

Peckham woods, Upper Clarendon, Jamaica (*Harris 12787*).

Gesneria jamaicensis sp. nov.

A glabrous shrub, up to 3.3 m. high, the young twigs and leaves resiniferous, the branches terete. Leaves oblong to elliptic, subcoriaceous, 7–12 cm. long, 2.5–5 cm. wide, acute or acuminate at the apex, closely serrate except near the entire, acute or acutish base, pinnately veined, the rather stout petioles 5–10 mm. long; peduncles axillary, slender, 1-flowered, about as long as the leaves; calyx-tube obconic or turbinate, 6–8 mm. long; calyx-lobes linear-lanceolate, bluntish, 8–10 mm. long, 1 mm. wide; corolla crimson or rose-pink, its tube subcylindric, 8–10 mm. long, its spreading lobes orbicular, strongly veined, erose, about 4 mm. broad; stamens included; filaments distinct, about 8 mm. long; anthers nodding; staminodium a little shorter than the filaments; style glabrous, 2-lobed; capsule broadly turbinate, about 8 mm. long.

Ipswich, St. Elizabeth, Jamaica (*Harris 12509*, type); Mulgrave, St. Elizabeth, Jamaica (*Harris 12374*).

Nearest related to *G. Harrisii* Urban, which has a sulphur-yellow corolla with oval lobes, the calyx-lobes filiform, the leaves crenate-dentate.

62. UNDESCRIBED SPECIES FROM CUBA

Scleria motemboensis sp. nov.

Annual with fibrous roots; culms solitary or few together, slender, erect, villous, about 3 dm. high. Leaves narrowly linear, villous, 1–1.5 mm. wide; inflorescence glomerate-spicate; glomerules of 2 or 3 sessile spikelets; bracts linear, long-ciliate, 3–4 mm. long; achene white, shining, 1.5 mm. in diameter, apiculate, faintly longitudinally striate, with 4 pores at each side of the subtrigonous base.

Small lagoon, Sabana de Motembo, Santa Clara, Cuba (*Léon and Loustalot 9405*). Nearest to *S. Lindleyana* Clarke of South America.

Ouratea savannarum Britton & Wilson sp. nov.

A glabrous shrub 5 m. high, the slender twigs grayish-brown, often somewhat flexuose. Leaves coriaceous, elliptic-lanceolate to elliptic-ovate, 4–8 cm. long, 2–3.8 cm. broad, acuminate at the apex, rounded at the base, faintly pinnately nerved, the margin spinose-serrate; petioles short, stout, 3–4 mm. long; inflorescence terminal, 6–11 cm. long; pedicels slender, 1–1.5 cm. long; buds ovoid; sepals oblong-lanceolate to oblong-elliptic, 7–7.5 mm. long, 3.2–3.5 mm. broad, obtuse at the apex; petals obovate, 9 mm. long, 7 mm. broad, crenulate; anthers oblong-lanceolate or oblong, 2.5 mm. long, subsessile; style 6–7 mm. long; fruit unknown.

Sabana de San Marcos, Santa Clara, Cuba (*Léon 9205*).

Banara Brittonii Roig sp. nov.

A slender shrub about 4 m. high, the young twigs densely pubescent. Leaves oblong to oblong-lanceolate or ovate-lanceolate, 4–7 cm. long, 1.5–3 cm. wide, acute at the apex, more or less inequilateral and rounded at the base, glabrous and shining above, reticulate-veined and densely pubescent beneath with short, whitish, mostly appressed hairs, the margin revolute, serrulate; petioles 5–8 mm. long, slender, with one or two orbicular glands at the summit; inflorescence terminal, inclined or pendulous, 5–7 cm. long, the branches puberulent, pedicels slender, 3–5 mm. long; sepals oblong-elliptic to oblong-ovate, 2.5 mm. long, obtuse at the apex, the margin ciliate; petals oval to suborbicular, about as long as the sepals, yellow; stamens indefinite; anthers rounded; style 1.5 mm. long; fruit globose (immature?), 4 mm. in diameter, becoming black in drying.

Rocky limestone soil, Cayo Mono, inside the swamp near San Pedro, Isle of Pines (*M. Cremata*, May 17, 1920).

Psidium Loustalotii Britton & Wilson sp. nov.

A small shrub, with short, grayish, often spine-like twigs. Leaves elliptic to oval, 2–4 mm. long, 1.5–3 mm. broad, rounded at both ends, dark green and more or less minutely hispidulous above, paler and strigillose beneath, coriaceous, the short petiole 0.5 mm. long or less; pedicels axillary, solitary, 2 mm. long; young fruit ellipsoid, 5 mm. long, 4 mm. in diameter, black.

Sabana de Motembo, Santa Clara, Cuba (*Léon & Loustalot 9394*).

Jacquinia Roigii P. Wilson sp. nov.

Shrub or tree?; twigs and branches glabrous. Leaves obovate, 4–8 cm. long, 1.4–2.7 cm. broad, strongly spine-tipped at the apex,

cuneate at the base, 3-nerved, in whorls of 4 or more with distinct internodes between the whorls; pedicels 3.5 cm. long; sepals long-ciliate; fruit ellipsoid, 1.7 cm. long, 1.1 cm. broad.

Cañete, Oriente, Cuba (*J. T. Roig 69*).

Tabebuia saxicola sp. nov.

A much-branched shrub, about 3 m. high, the short, stiff twigs white-lepidote. Leaves simple, entire, oblong or oblong-lanceolate, 2–4 cm. long, 5–11 mm. wide, acute at the apex, narrowed at the base, the upper surface pale green, loosely lepidote and with very obscure venation, the under-surface reticulate-veined and densely white-lepidote, the petioles 1–3 mm. long; flowers solitary or 2 together at the ends of short twigs; peduncles 1 cm. long or less; calyx narrowly campanulate, lepidote, persistent, about 7 mm. long, irregularly toothed; corolla 2–2.5 cm. long; capsule 4–5 cm. long, about 8 mm. thick.

Rocky top of highest mogote near Sagua la Grande, Santa Clara, Cuba (*Léon and Loustalot 9477*). In both flower and fruit August 12, 1920.

63. A NEW TOURNEFORTIA

Tournefortia barbadensis N. E. Brown

Stem probably scrambling, with the young parts minutely adpressed-puberulous. Leaves very spreading; petiole about 3 lines long; blade 1½–2¾ in. long and 6–10 lines broad, lanceolate, gradually tapering from about the middle to an acute apex, subacute or slightly rounded at the base, glabrous above, thinly and microscopically puberulous beneath. Cymes lateral below the ends of the branches, 2–3½ in. in diameter, on peduncles 3–5 lines long, lax, with the primary and sometimes the secondary forkings subhorizontally diverging, then branching in a zigzag manner, minutely adpressed-puberulous; branches about 3 lines apart and ⅓ in. long, very slender, variously curved, with the small slender flowers about 1 line apart. Pedicels ¼–½ line long. Calyx very small, about ½ line long, lobed almost to the base; lobes subulate or deltoid-subulate. Corolla minutely puberulous outside, with a rather slender tube about 1¼ line long, swollen at the upper part, and filiform lobes 1 line long. Ovary and style glabrous.

Barbados: Middle School, Christ Church, *Bovell & Freeman 404*, and without precise locality, *Lane 428* (in Herb. Kew), type

INDEX TO AMERICAN BOTANICAL LITERATURE

1907–1921

The aim of this Index is to include all current botanical literature written by Americans, published in America, or based upon American material; the word America being used in the broadest sense.

Reviews, and papers that relate exclusively to forestry, agriculture, horticulture, manufactured products of vegetable origin, or laboratory methods are not included, and no attempt is made to index the literature of bacteriology. An occasional exception is made in favor of some paper appearing in an American periodical which is devoted wholly to botany. Reprints are not mentioned unless they differ from the original in some important particular. If users of the Index will call the attention of the editor to errors or omissions, their kindness will be appreciated.

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